THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY

AND

SCIENTIFIC METHODS

JUL 9 1917
UNIV. OF MICH.
LIBRARY

VOL. XIV. NO. 14: JULY 5, 1917

CONTENTS

A Cul-de-Sac for Realism: DURANT DRAKE 365
Comment on Professor Brown's "Matter and Energy": FREDERICK J. E. WOODBRIDGE 373
Concerning Professor Woodbridge's "Comment": HAROLD CHAPMAN BROWN 380
On the Function of Visual Imagery and Its Measurement from Individual Reports: EDWARD L. THORNDIKE 381
Reviews and Abstracts of Literature:
Dewey's Democracy and Education: ERNEST C. MOORE..... 384
Durell's Fundamental Sources of Efficiency: A. T. POFFENBERGER, JR. 389
Journals and New Books 390
Notes and News 392

PUBLISHED FORTNIGHTLY

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

All communications to the Editors should be addressed to PROFESSOR FREDERICK J. E. WOODBRIDGE, or Professor WENDELL T. BUSH, Columbia University, New York City.

Subscriptions and advertisements should be sent to THE JOURNAL OF PHILOSOPHY, Sub-Station 84, New York City. The annual subscription price (twenty-six numbers) is $3.00 and the charge for single numbers is 15 cents. Advertising rates will be forwarded on application.

The Journal of Philosophy, Psychology, and Scientific Methods is owned and published by Frederick J. E. Woodbridge and Wendell T. Bush, at Lancaster, Pa.

Entered as second class matter, January 19, 1904, at the Post Office at Lancaster, Pa., under Act of Congress of March 3, 1879.

PHILOSOPHICAL, EDUCATIONAL, AND SCIENTIFIC BOOKS

JUST PUBLISHED

The Ethics of Euripides

By RHYS CARPENTER

50 cents net

A study of the fundamental assumptions of Greek ethical thought from an analysis of the extant plays of Euripides. Right conduct is shown to be identical with submission to Nature and much of Aristotle's ethical teaching to be contained by implication in Euripides.

ARCHIVES OF PHILOSOPHY, No. 7

Columbia University Press **NEW YORK CITY**

ROSMINI'S CONTRIBUTION TO ETHICAL PHILOSOPHY

By JOHN FAVATA BRUNO

Archives of Philosophy, No. 6
Columbia University Press
New York City

Religious Values and Intellectual Consistency

By EDWARD HARTMAN REISNER

75 cents net.

Archives of Philosophy, No.
Columbia University Press
New York City

Advertisements of new books will be inserted on this page for $1 an issue or $15 a year

Vol. XIV, No. 14. July 5, 1917

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

A CUL-DE-SAC FOR REALISM

THIS is an intimate talk with my fellow realists. We believe that the future lies with us—that idealism is on the wane, and some form of realism destined to become the dominant philosophy. But which form?

Perhaps most of us, on this side of the Atlantic, can agree upon an ontologically monistic realism. Consciousness does not exist, in the sense James had in mind; there is no peculiar stuff, or realm, that is mental, as distinguished from the world of physical objects; there is no sign of anything in the existing universe but *qualia* in relation. There are, indeed, some among us who agree with the prevalent British belief in diaphanous, or undiaphanous, mental activity or awareness, in subjects or egos or souls, or some other non-physical entities. They will find no attack in this paper upon any such beliefs. But in order to avoid any misunderstanding, I wish to state as explicitly as possible that I personally side with the dominant tendency in American realism in denying the existence of a non-physical stuff or realm or awareness or subject or ego—"there ain't no sech animal." The "mental" is a subclass of the physical, or refers, if you prefer, to a relation between certain physical entities. This is ontological monism.

With that question the contention of this paper has nothing to do. But I am going to attack *epistemological* monism; and I wish to leave no excuse for any further confusion of my epistemological dualism with ontological dualism. In my papers published several years ago in this JOURNAL and in *Mind* I tried to make my position in this regard clear. But my epistemological dualism was none the less interpreted by several critics as if it must be a Cartesian dualism. I was even called an idealist, and classed among the "writers who are now so superbly stooping to take notice of realism."[1] It is important to speak of this, because other realists of greater note than I have been similarly misunderstood. For example, Lovejoy's keen arguments against Perry's epistemological monism[2] were treated

[1] E. B. Holt, in *The New Realism*, p. 307.

[2] This JOURNAL, Vol. IX., pp. 673 ff.

by Perry as if they were attacks upon realism. It sometimes seems as if some of our contemporary thinkers were unwilling to call anybody a realist who is not an epistemologically monistic, or "naïve" realist. But actually not a few of us who equally scorn to solve any problem by calling a troublesome entity "subjective" or "mental," who are pan-objectivistic realists, and—having taken our licks at idealism—have as good a right as any to the popular sobriquet new-realist, believe the pathway of epistemological monism to be a *cul-de-sac*. Realism, we protest, does not imply it; and it is precisely the contention of this paper that realism must abandon its wooing of this hopelessly acidulous vestal and return to the embraces of its old love, epistemological dualism.

For the sake of saving space, let me call these rivals for the hand of realism by their initials. E. M. has been, then, a veritable will-o'-the-wisp, an *ignis fatuus* which realism has been straining every nerve now for some years to grasp; but the result is "ever not quite." E. D., the jilted partner, has been showered with jeers, and deemed a grass widow for good. A few, more keenly alive to the situation, or less blindly obstinate in their pursuit of the new love, have attempted a sort of compromise. But this experiment in bigamy has met with attacks from both sides; and whatever aspect of that compromise-doctrine embraces E. M. will be subject to the criticisms that make against a chaster union. No flirting, even, with the lady!

The reasons why it seems to me, with many others, that E. M. must be rejected, in spite of her great superficial attractiveness, are not new. It may arouse a groan to restate them. But in spite of repeated and excellently clear statement, they seem never to have been fully grasped by some of the ablest of the naïve realists. And those who have attempted to meet these objections seem to us not to have satisfactorily succeeded.

Let us first note, however, just what the admitted actual situation is. *The character of our sense-qualities is a function of the nature of our sense-organs and brains, and of our position in space.* Consider an unchanging object in the space surrounding my body. As I change my position in space, all the sense-qualities which seem to me to reside out there in the object change. If my eyes were to be changed, however slightly (so as to be similar, for example, to the eyes of certain other men or animals), these sense-qualities would again be changed. If the nature of my brain were to be changed, or if the nerve from my eye were to reach, say, the auditory tract in my brain, my sense-qualities would be still different.

Now of these familiar and admitted facts four, and so far as I can see, only four interpretations can be given. The first is, that an infinite number of qualities exist permanently in the object, each

revealed by the proper perception-mechanism. The second is, that a new quality replaces the old in the object whenever any change in the position or nature of a perceiving organism is effected. On this second interpretation there will be *on occasion* a great many different varieties of the same generic quality existing simultaneously in the object—namely, when many different observers are perceiving it. Either of these alternatives may fairly be called E. M. The third possibility, which I espouse, is that the sense-qualities which exist in my experience when I look at an object are not, numerically, the very qualities that exist in the object, but are effects of those qualities produced in me, representative of the qualities which exist in the object.[3] The fourth possibility is that my sense-qualities exist neither in me nor in the object which I am facing, but in some other place. Both the third and fourth views are E. D., making a numerical duplicity between our sense-qualities and the qualities residing in or constituting the object itself.

When I assert that only these four views are possible, I mean, *if we are to find a definite position in the time-space order for every existing quale.* But if we are ontologically monistic realists (and to those only am I now speaking), we must find such a position for every existing *quale.* We shall not be content to say that our sense-qualities are "subjective," or "appearances," or some such "mental" thing which need not have any location in space. That would be, anyway, but an easy way of shirking the problem by leaving it a mystery. Nor can we say that sense-qualities are subsisting entities that may exist in the mental order and not in the physical order. For we hold that all existing realities form *one* order—the physical world-order. And no entities more patently exist than our sense-qualities. They are *data datissima* indeed. They must, then, exist *somewhere* in the physical world-order, at least during the time when they exist within our experience. The question is, *where?* E. M. says: Out there in the objects. E. D. says, Somewhere else; the common form of it saying: In us.

It is impossible to get forward unless we can agree to take one horn or the other of this dilemma. I must, therefore, protest against Woodbridge's evasion of it. "A circle appears different to different observers differently situated. . . . Let us suppose that ten observers are given in different situations, then it is evident that the circle will appear ten times conformably to the ten situations. But over and above this evident fact *it is assumed that there will be ten different shapes which are existentially separate and distinct from one*

[3] The phrase "in me" is vague and can only be satisfactorily interpreted by an explanation longer than is here possible. "In my brain" is perhaps the least objectionable equivalent, but it will inevitably provoke misunderstanding.

another, and of which each is existentially separate and distinct from the circle itself. That is, if the circle appears to one observer as a flat ellipse, then it is assumed that the *appearance* itself is a flat ellipse. What these shapes are in their essence, where to put them, what to do with them when they are put there, how explain their relations and connections with one another and with the circle—here are problems to tax all our ingenuity, and problems on which no experiment or no fact of experience can throw any light. To affirm that if a circle appears elliptical, then its elliptical appearance is an ellipse, is not to state a fact, it is to make an assumption which condenses whole volumes of speculative philosophy and psychology into a single sentence."[4]

It is a matter of nomenclature whether we shall call the "elliptical appearance" "an ellipse" or something else. The *fact* in the case is this: there is a sense-quality within my experience, which has undeniable existence within my experience at least, and which is different in character from the sense-quality which I have when I change my position. *Where* does this undeniably existing *quale* exist? To say "the circle appears elliptical" is a shorthand way of talking of the case. Just what does that statement mean? It is an expression of our natural, but unanalyzed realism. There is a permanent object, a circle, of which these changing sense-qualities are appearances. As realists we agree to that. But accepting the existence of the permanent circle must not make us forget the evanescently existing sense-qualities which are "appearances" of it. An "appearance" must exist *somewhere,* it would seem. Certainly this sense-quality, which we are now calling an "appearance," must exist somewhere—if we are giving up the category of "mental stuff" which does not need to exist in any *place.* Our assertion, then, is not that "the elliptical appearance is an ellipse"—which seems to be only a verbal substitution—but that the "elliptical appearance," as Woodbridge terms the sense-quality in our experience, *is a datum,* a bit of reality, which must exist somewhere. I do not share his pessimism with regard to the questions where to put it, how explain its relations, *etc.,* although I can not here discuss these questions very much. The point to grasp now is, that the dilemma between E. M. and E. D. is a real one. This bit of reality exists either in the object outside the organism, *or* in the organism (or somewhere else).

The problem, so often explained by critics of E. M., is not one about the stuff things are made of, it is about the number, the order, the location of the bits of reality of which the existing universe is made up. Yet Woodbridge, in this and other essays,[5] Dewey in vari-

[4] This JOURNAL, Vol. X., p. 14. Italics in original.

[5] *E. g.,* "The Belief in Sensations," this JOURNAL, Vol. X., p. 599.

ous essays,[6] and most of the others who have undertaken to reply to these critics, persist in taking their arguments as if they were in behalf of idealism or ontological dualism, and so leave them still unanswered. For example, in a former article[7] I cited the case of a number of mirrors imaging a single object. My contention was that (just as in the case of perception by various human organisms) the various images (sense-qualities in the case of the organisms) were qualitatively different from one another, as well as existent in different places, and, therefore, clearly, numerically different. If the situation is similar in the case of perceiving organisms, E. D. is proved true; different sense-qualities (qualitatively and numerically) are produced by the object in different organisms. But Holt, after quoting a passage from my article, makes the brief comment: "Thus it is proved to the satisfaction of idealists (*sic*) that two mirrors can not image the same object."[8] Of course they can. The *question* is, Do the images exist *in the object*, are they numerically identical with some parts of it, or, are they numerically different, existing at other points in space, and only *similar* to it and representative of it?

If, then, the dilemma is accepted, I can proceed to state the three principal reasons why E. M. seems untenable, and some form of E. D., therefore, necessarily true.

I. *Contradictory qualities can not coexist at the same point in space at the same time.* If either variety of E. M. is true, they must so coexist, as we noted above. So if this italicized assertion is true, E. M. can not be true. A few venturesome thinkers have therefore denied the assertion. Space does not permit an extended discussion of their views. But discussion is hardly useful here, for the views in question are hardly more than assertions, without careful consideration of the difficulties in their way. McGilvary has sketched for us a world[9] in which vast numbers of "immaterial" *qualia* exist at the same points as the "material" entities which form the executive order of the world. But why are these immaterial entities not discovered out there by science? Why does only one perceiver, possessed of one particular kind of sense-mechanism, perceive one of these innumerable *qualia*, another another, *etc.*? World stuff seems multiplied *præter necessitatem*. And such a view makes sharply against common sense, which views objects as having just one definite shape, size, color, *etc.* The world becomes blurred into an indistinguishable welter of qualities. All the illusory and hallucinatory qualities of objects are as truly "out there" as their "real" qualities!

[6] *E. g.*, "Brief Studies in Realism," this JOURNAL, Vol. VIII., p. 393.

[7] This JOURNAL, Vol. IX., p. 149.

[8] *The New Realism*, p. 369.

[9] *Philosophical Review*, Vol. XXI., p. 152.

Holt has been here, as generally, the most radical departer from common sense. He insists[10] that the world is chock-full of contradictions: "every case of collision, interference, acceleration and retardation, youth and decay, equilibrium, *etc., etc.,* is an instance."[11] But such opposition of forces or laws is not really a case of contradiction; these laws or forces are really but *tendencies,* which are not *actualized* simultaneously. This is a very different matter from the compresence at one point of contradictory qualities, which he seems to think becomes thereby plausible.

Unless, then, some happier argument can be adduced, most of us will agree with Montague's "axiom of uniplicity," and share his belief that the multifold-quality view (which is the inevitable corollary of a strict E. M.) "will ruin the realistic movement if it is not repudiated. Any one place at any one time must contain but one non-contradictory set of qualities. Such a set of qualities is what we mean by an object, and its occupancy of one space at one time is what we mean by its existence."[12]

II. *There is no apparent mechanism for the projection of sense-qualities into objects.* Whether or not it is *conceivable* that all the size-qualities, shape-qualities, color-qualities, *etc.,* that exist in the experience of the various observers when they simultaneously "perceive the same object" should really exist "out there" where the object is, there seems to be no way for them to *get* out there. These sense-qualities are admittedly functions of the organism; what they are to be must await for decision the nature of that organism. The mechanism of perception is, however, a one-way mechanism. It brings us influences from objects, but it includes no mechanism of reprojection of the qualities caused by it back into the objects. Perception is not an outreaching process, like a searchlight resting now on this object, now on that. It is simply a series of causes and effects: an event in the object produces a pulse of radiation, that produces an event in a sense-organ, that a nerve pulse, that a brain-motion. The sense-quality exists in our experience either exactly or nearly exactly at the instant of this brain-motion, upon whose nature *its nature* depends. By what mechanism should the sense-quality arise *in the object* at this precise instant? Is it not easier to suppose that perception is in reality no such boomerang; that in attributing our sense-qualities to the outer objects from which the influence comes we are victims of a universal illusion, and that the qualities we seem to see in the objects are really the impressions they make on us?

III. *Our sense-qualities exist at a time later than that of the*

[10] *The New Realism,* pp. 360 ff., *The Concept of Consciousness,* Ch. XIII.
[11] *The New Realism,* p. 364.
[12] *Philosophical Review,* Vol. XXIII., p. 55.

events in the objects that cause them. This "time-difficulty" of naïve realism produces, as we all know, in certain cases the significant result that the object has utterly ceased to exist at the moment when the sense-quality exists in our experience, and in other cases the equally significant result that our sense-qualities exist in our experience in a time-order different from that of the events in the outer object. The impossibility that a sense-quality existing *now* in my experience should be numerically identical with any aspect of an object which no longer exists is so obvious that the argument needs no emphasis. Various naïve realists, however, have sought to evade the difficulty in some such manner as this: "Why, pray, would perception be any the less perception if we acknowledged that it is a relation to the past? Only because of the very assumption which is here in question, namely, that the *presence* of the object is equivalent to its temporal *presentness*. . . . If we tenaciously hold to the point that it is the *hearing,* not an objective-content-heard, which is *now,* the time-discrepancy vanishes."[13]

Such an analysis of the situation seems inadequate. It is not merely the act of perception which exists *now*; the sense-quality exists now. Only the implications of a theory "tenaciously held" can blind any one to that. It is the surest of all facts, the datum upon which all theories must build.

We may, indeed, agree that perception, like memory, is "a relation to the past." And when we think *about,* or *remember,* an object not now temporally present, we may, if we like, speak of the *presence* of that object to consciousness. But that really means, we insist, that our temporally present thought, or memory stuff, *refers to, represents,* a not actually present object. The case of perception is in this wise similar: there are temporally present in our experience—existing, undeniably, *now*—what we are calling sense-qualities. If these *qualia* are numerically identical with *qualia* existing in the *object,* or forming part of it, then it follows that these aspects of the object have not only "presence," but "presentness" in our experience. If, on the other hand, E. D. is true, the sense-qualities have "presentness," while the qualities of the *object* have "presence," in the sense that the object thought *of* or *remembered* has presence. It may be said to be *perceived,* just as the object in the other case may be *remembered;* but in both cases it is really *represented* by the *qualia* (sense-qualities or memory-stuff) now present. But at any rate, whether this view is correct or not, the time-difficulty remains a flat disproof of E. M. If as realists we believe in a time-space order where every *quale* that is ever to exist has a definite position, from which it never budges, it follows that a *quale* now temporarily

[13] B. Ewer, this JOURNAL, Vol. VI., p. 147.

present in my field of consciousness can not be numerically identical with a *quale* which formed an aspect of an object that no longer exists.

As in the case of the other arguments against E. M., the point of this argument is constantly missed by contemporary writers. Holt, for example,[14] quotes disdainfully the following excerpt from an earlier article of mine: "The 'real' object always exists earlier in time than the perceived object, which we hastily assume to be the 'real' object, yet which is really but an element in our own experience and not the object, or eject, which exists in and for itself."[15] I had put the word "real" in quotation marks in order to remind the reader that the adjective was not of my choosing. The terms "real object" and "perceived object" were recommended by the committee of the American Philosophical Association to designate what I prefer to call the "object out there" and the "sense-quality," because, as I used to insist, the one is just as *real* as the other, and both belong, as I believe, to a single realistic world-order. The point of my sentence, then, as the context made clear, was exactly that which I have here been making—the numerical duplicity between the two *qualia* which E. M. identifies. But Holt's comment is as follows: "Succinctly stated, the astonishing argument is that the mental image is not a part of the real world, but is distinctly non-physical and non-real, and belongs intrinsically to another, the subjective order of being, because it lags in time behind the real order of things: and this is urged notwithstanding the fact that every case of image which can be cited from the strictly physical world lags in exactly the same way behind its real physical prototype."

This reply not only misses the point of the argument, but seems really to concede the case. It is admitted that every image lags behind its "prototype." Surely, then, the image is a different entity from the "prototype." Just so is the sense-quality a different entity from *its* prototype. If the assertion is made that both are but parts of *one object,* the reply is obvious that they are not the *same* part. Calling the whole process "one object" is only a verbal E. M. That part of the object which is the sense-quality exists at a later time, is numerically different from, and representative of, that part of the object which existed "out there"—the source of the radiation. But this is E. D.

There are other good arguments against E. M. But these are good enough. Surely the wedding of realism with this lady must not proceed until these objections are satisfactorily met. Many of us believe that they never can be satisfactorily met; that, in fact, E. M.

[14] *The New Realism,* p. 307.

[15] This JOURNAL, Vol. VIII., p. 371.

is a mistaken theory. If the objections to E. D. seem insuperable, the honest course would seem to be to commit ourselves to neither, but to keep our minds open for the present. The cocksureness, therefore, of the realists who hold to E. M. seems ill-advised. If they choose to exercise their will to believe in the face of such weighty arguments, they should at least be less impatient of those who espouse E. D.

It seems as if these realists had first decided that E. M. must be true, and then set to work as best they could to answer the objections to it. It is easy for them to do this, since E. M. is the natural human view—until one examines the situation carefully. But the natural view is by no means the correct view—as was shown, for example, when Copernicus upset man's natural way of thinking in another matter. E. D. requires just such a mental wrench; but it may none the less be the correct account. Hence it is not enough to start with the assumption that E. M. is true, and then, when the objections to it are offered, to declare that these aspects of the matter are a mystery, that they remain to be cleared up in the future. Until they are cleared up, E. M. can not pose as the correct view. We must indeed listen with open ears to any new defense offered in its behalf. We may even legitimately cherish the belief that it will turn out, after all, to be the correct view. But at present the suspicion seems well founded that this particular form of realism leads into a *cul-de-sac*; there is here no thoroughfare. My own belief is that the insistence on epistemological monism on the part of some of the most conspicuous leaders in the neo-realistic movement is the greatest obstacle in the way of the spread of a sound realistic philosophy.

DURANT DRAKE.

VASSAR COLLEGE.

COMMENT ON PROFESSOR BROWN'S "MATTER AND ENERGY"

IN his paper on "Matter and Energy," recently published in this JOURNAL, Professor H. C. Brown has given an excellent example of sound metaphysical analysis in sharp contrast to what he calls "sentimental" philosophy. His conclusions are worth repeating:

"Our answer to the question raised above (p. 59) is now obvious. Atoms, electrons, and the like can not be unreal or they would not possess the value necessary to fulfil their function in a body of scientific knowledge. They are not mere symbols, nor are they independently existing elements brought together to constitute a whole of reality. They are simply phases of physical existence that have exceptional value from the fact that through centering attention on them it is possible to state some process in lawful fashion.

"Perhaps the most pernicious error in philosophic thinking, and even in the thought of many scientists, is that separation of matter and energy, which while justifiable in the sense that we can distinguish the shape of an object from its color, and insist that one is not the other, is wholly illegitimate, if we try to think as if the color and the shape are independent realities brought together in the particular object, instead of analytically derived aspects that have quite different practical values when it is a question of dealing with objects. If scientists have talked about 'energy atoms,' it is merely because the kind of contact we have with certain phenomena makes it impossible for us to find the 'term character' in the source from which changes spread and so the resultant energy factors constitute the sole datum, and it becomes possible to beguile ourselves with the belief that here we have a genuine disembodied energy.

"The scientists' world is the real world, but with a qualification. It is a selected real world according to those aspects which are significant for a certain purpose. Unlike the artist, whose aim is expression, the scientist can not introduce what is not really there into a certain context, but he can preserve in that context only what is fruitful for a certain purpose. He is ever under the pressure of the need of prediction. The map-maker would certainly be wrong if his map did not denote realities, but he would just as certainly be absurd if, because he charted his territory in terms of rivers, mountains, valleys, and plains, he should assert that there was nothing else of which the landscape is made up. There is no such a thing as an atom in just the sense that there is no such thing as a river, *i. e.*, they are not found out of integral relation to other realities."[1]

Put in general terms, these conclusions seem to be: (1) that the distinctions discovered by analysis which are relevant to the comprehension or execution of any operation are not arbitrary, but are determined by the character of the situation and operation which are analyzed; (2) that such distinctions, however, are not absolutely discrete existences out of which the continuity of existence is composed; and (3) that conclusions (1) and (2) are not contradictory.

These conclusions appear to me to be solid and satisfactory. Yet I think that I detect in Professor Brown's exposition of them an attitude of mind which is reminiscent of profitless philosophical controversies, and which tends to confuse their simplicity. In this I may be mistaken, for the comments I have to make may indicate only that I have drawn from Professor Brown's words implications which, he might claim, they do not necessarily warrant. If that is the case, my comments do not touch his ideas. They leave them untouched in their metaphysical significance.

[1] This JOURNAL, Vol. XIV., pp. 64–65.

When he speaks of the aspects of things derived by analysis as having "quite different practical values when it is a question of dealing with objects," I stumble over the adjective "practical." Why does it appear in this context and why is it suggested elsewhere in the discussion? Precisely what distinction does it intend? The whole discussion, as I understand it, drives home the point that the values discovered by analysis are precisely what they are discovered to be, and this simple fact does not warrant the conclusion either that these values must also be discovered in a different situation, or that there are values which can be discovered independent of or out of any situation and so be regarded as absolute constituents which are somehow independently combined. Indeed, I take it that one of the chief merits of the paper is the demonstration that this latter conclusion is unintelligible when tested by any instance of an analysis actually performed. The physicist, for instance, finds atoms when and where he finds them, and he finds them rather than something else because they and not something else are the values really discovered in the situation he is analyzing. Furthermore, he does not find them as wholly isolated and independent things which can be defined irrespective of the situation in which they are discovered, or be regarded as the constitutive elements of the continuity of the physical world. But why, then, call their values "practical"? Why is any adjective necessary to describe them? And if an adjective is desirable, why not call them "discovered" or "real" or "relevant"?

Now in the atmosphere of philosophical controversy, the adjective "practical" does not connote "real" or "discovered." It implies an attitude of mind toward metaphysical conclusions which impairs their metaphysical status. It seems to me to imply that these conclusions are not final, but need revision in terms of an antecedent metaphysics of knowledge; and that this antecedent metaphysics is a kind of universal metaphysics which colors all conclusions in all departments of knowing. Its thesis seems to be that all values whatsoever are "practical," and this thesis seems to rob the adjective "practical" of all meaning. Delete the adjective from the quotation I have cited, and the question which we naturally ask is simply, "Have these values as a matter of fact been discovered?" Retain the adjective, and the implication appears to be neither that these values are discovered only when an effort is made to discover them, nor that we can discover another set of values the contrast with which will afford us greater illumination. It appears rather to be that all distinctions in the subject-matter of knowledge are relevant to the fact of knowing and not to the subject-matter itself.

I can understand how such a metaphysics of knowledge has been historically and even analytically motived, but I can not render it

intelligible to myself. The distinction between thinking and subject-matter is, no doubt, a practical distinction in the sense that practical consequences flow from the exercise of thought, and also in the sense that thinking is an aid to practise. The attempt, however, to construe the distinction as generated by thinking for practical purposes is both futile and unintelligible. For all thinking, as I see it, goes on in a situation wherein the distinction between thinking and subject-matter is ready-made.[2] With this distinction ready-made, I can understand how we should seek to find in the subject-matter of thinking distinctions and values relevant to our needs and purposes, and how we could call these distinctions and values practical in the sense that they are thus relevant. But I find myself at a loss when these obvious matters are so construed that they seem to imply that these distinctions and values are what they are because they are practical. I should suppose that their practicality was a consequence of their nature, but not its cause. Now if the statement I have quoted from Professor Brown's paper means that the aspects of things derived by analysis have different consequences or efficacies in different situations, that statement appears to me to be evident and sound. If, however, it means that these aspects are what they are because they are "practical," the statement is to me unintelligible and implies an unintelligible metaphysics of knowing.

Professor Brown says also: "Resting-points in analysis are determined by the needs of human action, and what we are satisfied to call elements depend on the nature of reality as limiting and making possible our activities" (p. 63). This statement suggests a comment like that already made on the former quotation. It is evident that, if we did not act, we should never discover resting-points in analysis nor how reality limits and makes possible our activities. But why is it important or illuminating to say so? What is the implication of emphasis on a proposition which it would be trivial to dispute? Again, in the atmosphere of philosophical controversy, the emphasis seems to me to imply not questions about precisely what resting-points in analysis have really been discovered, nor precisely how the nature of reality limits and makes possible our activities, but questions about the nature of knowing which, when answered, lead us to restate the results of analysis in terms of a metaphysics of knowledge. The quotation is confusing. But I will not dwell further on that aspect of it, because I have cited it for another reason.

As I have said, the quotation is confusing. But strip it of its

[2] Since we do not think always, I would not imply that inquiries into the causes which excite thinking are futile. When thinking is excited, practical consequences follow upon its exercise, but these consequences do not, to my mind, indicate that practical needs are the causes of thought.

confusion, and then its correctness may be challenged. In other words, let "human action" imply action which is not human, and "our" activities imply activities which are not ours, then the statement made in the quotation is evidently incorrect. For while certain resting-points in analysis may be determined by the needs of human action, not all are so determined. Those with which Professor Brown deals are not. They are determined by a kind of action the "need" of which, if we may speak that way, is characteristic of countless other things besides man. The proviso must be kept in mind, however, that the quotation is stripped of confusion. The need of physical science is, naturally, a human need, but physical science has, obviously, a wider applicability than to human needs, and discovers how the nature of reality limits and makes possible other activities besides our own. The same is true of science generally, for the sciences generally, even including those that deal specifically with man, discover the nature of reality as limiting and making possible all sorts of activities of which "ours" are but one kind. Professor Brown says that the scientists' world is "a selected real world." This is profoundly true, is, indeed, to my mind, both in the form of its expression and in its implications, one of the most significant things in the paper, for it declares that a "real" world defined without reference to some selective process is unintelligible. But it is not simply because scientists or "we" select, that values can be selected and distinguished. They are selected and distinguished by other means also. For surely a plant selects and distinguishes its nourishment and a river cuts out its channel.[3] All this is so obvious that it seems unnecessary to state it. I have thought it worth while to state it, however, because the quotation made at the beginning of this paragraph seems to be confusing and incorrect. It promotes controversy rather than knowledge.

I have made these comments not with any desire to impair the beauty and cogency of Professor Brown's paper, but in the interest of sound metaphysical analysis of which the paper affords, to my mind, so striking an example. Such analyses have been seriously impeded by the tendency among so many of modern philosophers to think that an analysis of the fact of knowing makes it necessary to revise the results of analysis generally in terms of the process by which these results are attained. The earlier outcome of this habit of mind was

[3] In this connection, I should say that the final paragraph of Professor Brown's paper, which I have not quoted here, is somewhat puzzling. Surely the "organism transparent to solids," even if fanciful, is, for purposes of exposition, not unlike a plant or a river or an atom. We could understand its map and it could understand ours, not simply because we select and it selects, but because both of us are in the same world, which is always a "selected real world."

to make thinking a purely theoretical activity which does not vitally cooperate with other activities in the business of successful and happy living, but which is an activity apart, and one which judges according to its own categories the subject-matter with which it deals. The real world became, so far as it is to be described as of any particular sort, a world which is ultimately to be described as a "*known* real world." In other words the metaphysical question about the nature of the world received the answer: "Its nature is to be an object of knowledge." The important topic of inquiry then became: "How is an object constituted as an object of knowledge?" Metaphysics was entirely absorbed in a metaphysics of knowing. Nearly all living philosophers over the age of forty were educated under the controlling influence of a metaphysics of this kind.

Not all of them, however, were so educated with docility. The fact that thinking is also practical, a real instrument for successful living, was too obvious to be overlooked by them. Then, too, the general intellectual atmosphere had changed. Whereas the older generation did its speculating when the sciences of mathematics and mechanics furnished the basal ideas for nearly all philosophizing, and encouraged the habit of thinking of the world in spatial terms as one completed and self-contained object of thought, the newer generation was under the influence of biological, Darwinian, and historical ideas. These ideas were not favorable to an absolute and simultaneous grasp of things by the mind. They forbade the view that the world is essentially an object of knowledge, and encouraged the view that it is a domain of process, readjustment, and adaptation, wherein thinking is one of a number of activities all of which may be involved in the going on of process, readjustment, and adaptation. A vigorous philosophical reaction was the result. All that is distinctive, valuable, and promising in current philosophy is—I think it may justly be said—largely the outcome of this reaction.

But this reaction has been largely negative. The relative infrequency of pieces of constructive work like Professor Brown's is a noteworthy feature of the philosophical literature of the past twenty-five years. Most of the writing produced by the reaction has been in the interest of promoting what Professor Bush has happily called the "emancipation of intelligence," and in furthering habits of direct and experimental inquiry. Constructive work has been distinctive almost exclusively in other fields than metaphysics—education, ethics, and logic, for instance. There are reasons enough for this change of interest, reasons to be found in social and economic conditions; but the neglect of metaphysics is in part to be explained also by the confusion incident to the philosophical reaction. Metaphysical ques-

tions have rarely been approached with the directness which real intellectual emancipation warranted. They have been approached rather by first substituting for the proposition, "Thinking is theoretical," the proposition, "Thinking is practical," and then proceeding to view the world as the object of thought's practical activity, and to construe the results of analysis as determinations of thinking as practical, in much the same way as these results had formerly been construed as determinations of thinking as theoretical. Is there, for instance, much difference between the assertion that to be an object means to be thought of in ways determined by the need of thinking consistently, and the assertion that to be an object means to be selected in ways determined by the need of solving practical problems; or between the assertion that the concepts of science are derived from the ultimate categories of judgment, and the assertion that they are conventions adopted for reasons of practical economy; or the assertion that the truth of an idea consists of that idea's congruence with the rest of ideas, and the assertion that it consists of the practical consequences of the idea? The latter assertions, although they indicate a changed and stimulating point of view, do not, to my mind, indicate that the older intellectual habit in metaphysics has been really abandoned, the habit, namely, of restating the results of analysis in terms of the process by which these results are reached. The persistence of this habit is, I believe, the principal cause of the confusion which has characterized so much of recent philosophical discussion.

That there is no need to restate the results of analysis in this fashion, and that it is not really intelligible to do so, Professor Brown's paper, to my mind, abundantly demonstrates. These results are not changed by a consideration of the fact of knowing. They are changed only by further analysis of the subject-matter to which they are relevant. In short, if we really regard thinking as a genuine instrument of discovery and adaptation, we have abandoned that futile type of metaphysics which makes a theory of knowledge fundamental to all other theory, whether thinking is regarded as essentially theoretical or essentially practical. Then intelligence has been really emancipated. Then we are in a position to address ourselves to metaphysical analysis with that directness, immediacy, and confidence which, when seen in others, is wont to stir the envy of philosophers.

FREDERICK J. E. WOODBRIDGE.

COLUMBIA UNIVERSITY.

CONCERNING PROFESSOR WOODBRIDGE'S "COMMENT"

IN reviewing Professor Woodbridge's generous criticisms of my paper on "Matter and Energy," it is dawning upon me that a sort of esthetic attraction that I feel for the word "practical" has led me to use this word freely, here and elsewhere, in a sense close to its derivative meaning, and that I have completely overlooked the difficulties it might have for one who, like Professor Woodbridge, sees it in the light of its rôle in epistemological controversy. Thus with respect to his first quotation (pp. 373–4) if "practical" merely means, as I intend, "related to acting," it could only be applied to values if they were "discovered," "real" *and* "relevant." I am not sure, however, but what I agree with him that it would be well to omit the adjective in this instance.

I am not so sure, however, about the following sentence: "It appears rather to be that all distinctions in the subject-matter of knowledge are relevant to the fact of knowing and not to the subject-matter itself" (p. 375). They are relevant, I believe, to the kind of interaction that takes place between the knower, an organism, and the known, the physical world. Perhaps this is the same thing as "the fact of knowing," but I feel an epistemological shadow on this latter phrase that gives me pause. I was interested in emphasizing this situation in which knowing takes place and the contribution of all its actual factors to the resulting knowledge.

The difficulty seems to have carried over in Professor Woodbridge's mind to his next quotation (p. 376). I confess the second paragraph of his criticism puzzles me. I asserted that "resting-points in analysis are determined by the needs of human action. . . ." He comments that "not all are so determined" (p. 377). Perhaps I should have been more explicit. The "resting-points of analysis" mean to me here "the objects denoted by our scientific conceptions" and I was trying to say that any particular selection of such objects in our sciences results from the nature of the physical world and the human organism. I do not approve my own use of the word "need" here and should like to substitute "conditions." I see no objection to the word "human" for it is the sciences we have that I am interested in.

And this is closely related to the difficulty that Professor Woodbridge finds with the end of my paper (note 3). I never intended to imply that it is "simply because scientists or 'we' select, that values can be selected and distinguished." I agree perfectly with him that "they are selected and distinguished by other means also," and should have no objection to his instances of the plant or the river. But for the purposes of this paper, I was interested in certain specific selections that lie at the basis of a special science. I did mean,

however, by my example of the organism transparent to solids that although it is the same world that is mapped or from which selections are made, the mapping or the selecting could be made from such different points of view that, to differently constituted organisms, one selection might be of value and the other not. The plant and the river are in the same world, but if each had a science that mapped that world from the point of view implied by its activities, I think it might be a little difficult, although it is not inconceivable, for each to understand the other's map.

I do not believe that Professor Woodbridge will be in any deep disagreement with these explanations and my only reason for supplementing his remarks is that it is a question of making clear a certain type of metaphysical analysis in which we both believe profoundly, whether or not we shall be able to bring our conclusions together now or in the future.

HAROLD CHAPMAN BROWN.

STANFORD UNIVERSITY.

ON THE FUNCTION OF VISUAL IMAGERY AND ITS MEASUREMENT FROM INDIVIDUAL REPORTS

SOME years ago in this JOURNAL I presented evidence that individuals who reported themselves as capable of calling up clear and vivid imagery or objects did not differ appreciably in the accuracy of their judgments of numbers or magnitudes from memory, from individuals reporting little or no power to call up clear and vivid images.

It is of some interest to know whether the same holds good when the judgments are of *relative* magnitude or proportion; and I have recently secured data on this point, by the following method: Students of Teachers College and Barnard College who had estimated their imagery of their breakfast-tables and of an often-seen face were requested to tell what per cent. the length of Schermerhorn Hall is of the total 120th-Street width of the Columbia University campus. The question was made entirely clear, and the students were encouraged to imagine themselves as standing on 120th Street facing the campus, and to picture the building in question as it stands so as to be able to see how much of the campus's width its length took up in their visual image of it.

The results for the 115 reported "best" visualizers and the 122 reported worst visualizers, representing roughly the top and bottom thirds as reported, were as follows:

FREQUENCY OF EACH DEGREE OF ERROR

Error	The Best Visualizers as per Report	The Worst Visualizers as per Report
0	1	1
1	1	1
2	33	26
3	1	8
4	0	1
5	1	2
6	14	7
7	28	23
8	1	1
9	2	3
10	0	6
Over 10	33	43

There is thus only a very slight advantage in favor of the top third in visualization. Also it is possible that the nature of the instructions, which emphasized the use of the image as a basis of judgment, may have been to the disadvantage of those who could summon no clear or stable image of the campus front containing the building. Had the question been put without any suggestion as to picturing the facts in the mind's eye, even the small apparent advantage to the good visualizers might have been absent.

It is also of interest to discover whether small details and relative positions in space are kept in brief memory better by alleged good visualizers. Betts found little or no advantage. The experiment to be reported here concerns the speed and accuracy of mental multiplication of a three-place by a two-place number, four such examples being done, in response to the following instructions:

Record a time in minutes and seconds at which you will start to multiply mentally in the examples below. Cover them until that time. Then uncover them and multiply *mentally,* writing down *nothing* whatever until you have the *entire answer.* That is, you must keep the partial products in memory and add them from memory, doing all the work for an example mentally till you have the entire answer. Then write it down. Then start at once with the second example, doing it in precisely the same manner; and then the third and fourth. When the answer to the fourth is obtained and written, record the time.

246	729	379	647
93	68	82	79

Classifying the individuals according to their reports of the clearness and vividness of their images of breakfast-table and often-seen face as before, we have the following results:

For the best visualizers (those reporting themselves as 1, 1, or 1, 2, or 2, 1, or 2, 2, or 1, 3, or 3, 1 in visual imagery), a median time of 480 seconds with 5 as the median number of mistakes.

For the worst visualizers (those reporting themselves as 4, 4 or 3, 5 or 5, 3 . . . to 7, 7 in visual imagery), a median time of 500 seconds with 6 as the median number of errors.

In so far as it is desirable to define and measure reported powers of visualization it is useful to know how many often-seen objects a person should report on in order that his report may give substantially as good information as his report on an infinitely long list of such objects. I have made the necessary computations to determine this on the basis of the responses of 368 college students to the following instructions:

Consider your own visual image of your breakfast-table and of the face of some one you know well. Rank yourself on a scale from 1 to 7 for the clearness and fidelity (that is, perfectness of representation of the thing imaged), of your visual images in these cases, letting 1 mean that the pictures in your mind's eye are as clear as the things themselves and are absolutely faithful copies. Let 7 mean that you can get no mental pictures of the things at all.

Let 2, 3, 4, 5, and 6 be degrees of clearness and fidelity that are between 1 and 7, 4 being half-way between 1 and 7, and the differences between 1 and 2, 2 and 3, 3 and 4, 4 and 5, 5 and 6, and 6 and 7 being equal.

The correlation table resulting is as shown below. The coefficient

CORRELATION BETWEEN REPORTED VISUAL IMAGERY OF THE BREAKFAST-TABLE AND REPORTED VISUAL IMAGERY OF A FAMILIAR FACE

Familiar Face ↓ \ Breakfast-Table →	1	2	3	4	5	6	7	
1	44	43	12	1				100
2	18	42	38	10	3		1	112
3	7	16	18	13	5			59
4	2	7	8	6	5	7		36
5	2	3	6	13	2	5	1	32
6			2	4	8	6		20
7				1	1	6	1	9
	73	111	84	48	25	24	3	

by the Spearman foot rule transmuted into terms of a Pearson coefficient is .7. By applying the formula of Brown,

$$r_n = \frac{nr_1}{1 + (n-1)r_1},$$

it is found that reports on ten objects will give practically as good a result as an infinite number of reports (r being .96 for the result from one set of such ten with another set of ten).

EDWARD L. THORNDIKE.

TEACHERS COLLEGE,
COLUMBIA UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

Democracy and Education. JOHN DEWEY. New York: The Macmillan Company. Pp. xii + 434.

Ever since the hunting, that Plato said all philosophizing is, began, there have been two opinions as to its value. Though it has been the chosen pursuit of a few, a part of mankind, and never a small part, has persisted in regarding it as useless wordiness. But a far more serious misfortune which has attended it almost from the first has been the contrariety of opinion which has obtained among the hunters themselves as to what it is they are hunting. Socrates and Plato had a consistent programme; knowledge was all of one kind to them. They were hunting for a way to live, not merely a way to think. Knowledge therefore took on a fateful significance to them. Without it one could not cultivate the olive, or steer a ship, or examine his own life, or bring up his children, or serve the commonwealth. But when Aristotle came with his confusion-breeding distinction between knowing for the sake of knowing and knowing for the sake of doing, he set theory against practise and took away strength and dignity from both knowing and doing.

Since that unfortunate time philosophy has for the most part been a subject-matter of great abstractness, professing to be concerned with the ultimate nature of reality, whatever that may mean, rather than a hunting down of the difficulties of our common life and a persistent effort to find ways of dealing with them. Its search for knowledge wholly unmixed with volition has made, of what was in its beginning a very human enterprise, an exceedingly elaborate technique of distinctions, the manipulation of which, having virtue in itself, is generally regarded as the exclusive function of a specialized fraternity. The vaunted intellectual knowledge to which they

devote themselves provides the absorption of a captivating game, but does not bear the fruit of human helpfulness which we have a right to expect. Theoretical knowledge without practical knowledge is empty. Either philosophy must bake bread or it can not give us God, freedom, and immortality.

As soon as one begins to put this noble art of asking and answering questions to human uses the whole situation changes. Its problems lose their passivity, and become live things which powerfully resist the manhandling of arbitrary treatment, and point out their own solutions. There is no branch of human endeavor which so completely integrates all forms of human striving as the education of the young. There is no approach to reflection so potent as that which the theory of education involves. Philosophy grew up as an effort to comprehend the requirements of educational procedure. The greatest masterpiece in its literature is Plato's matchless work on education. If philosophic issues make and can make no difference in educational procedure, it is evident that they can make no difference anywhere else in life. If education, on the other hand, can go on just as well without philosophy as with it, it is evident that it is indeed the unexamined life which Socrates declared was not fit to be lived by any man.

"The educational point of view," writes Professor Dewey, "enables one to envisage the philosophic problems where they arise and thrive, where they are at home and where acceptance or rejection makes a difference in practise. . . . Education is the laboratory in which philosophic distinctions become concrete and are tested. . . . The most penetrating definition of philosophy which can be given is, then, that it is the theory of education in its most general phases."

If philosophy is *for* anything, if it is not a kind of mumbling in the dark—a form of "busy work" which otherwise unoccupied adults mark time with—it must shed some light upon the path, must help to make purposes more articulate and their realization more likely. Life without it must be a different sort of thing from life with it. And the difference which it makes must be in us. It can not be a debt of honor which we blindly pay to objective reality—a tribute which things exact from us. It must be a service which we attempt to render to ourselves. It grew out of defeated human purposes. It exists to redeem action. "Philosophic thinking has for its differentia the fact that the uncertainties with which it deals are found in widespread social conditions and aims, consisting in a conflict of organized interests and institutional claims. Since the only way of bringing about a harmonious readjustment of the opposed tendencies is through a modification of emotional and intellectual disposition, philosophy is at once an explicit formulation of the

various interests of life and a propounding of points of view and methods by which a better balance of interests may be effected. Since education is the process through which the needed transformation may be accomplished and not remain a mere hypothesis as to what is desirable, we reach a justification of the statement that philosophy is the theory of education as a deliberately conducted practise."

Philosophy, then, is reflection upon social ideals, and education is the effort to actualize them in human behavior. They go hand in hand. There is no philosophy which is not philosophy of education, and no genuine education which is not the product of philosophy. Clearly this is a point of view as fruitful to philosophy as it is to education. Certain changes have taken place in social life which Professor Dewey believes call urgently for a reconsideration of the basic ideas of traditional philosophic systems and a corresponding reconstruction of educational practise. The most significant of these changes in social life are due to the advance of science, the industrial revolution, and the development of democracy. Such practical changes necessitate new formulations of the relation of mind and body, theory and practise, man and nature, the individual and social, *etc.*, and powerfully affect our notions about human nature and the ways in which it should learn to deport itself in order to live well.

A critic of this book has complained that "in the Deweyan social system there is no room for any individual who wishes to lead his own life in the privacy of reflective self-consciousness." That is true. There is no room for such an individual because there is no such individual. An individual who strictly leads his own life in the privacy of his reflective self-consciousness would have to be an individual who did not vary with his environment. A being who gives and takes with other beings has a social environment. His giving and taking may be little or much, but the activity of other beings produced him, and the activity of other beings allows him to live. Wherever he is he must either learn to fit in or teach others to fit in. It is only when society is conceived as a ready-made reality set over against individuals, and spelled with a capital "S" that the relation of the individual to his group becomes difficult to comprehend. If society is a hypermetaphysical entity, like the realistic conception of the German state, a something to which we belong, but which does not belong to us, neither it nor the demands which it makes upon men nor the education which it requires can be comprehended. But then why create such an idol?

This world in which we live is made up of individuals working together. They are born at different times. There is a telescoping of the generations. If individuals came ready made at birth there would be no such thing as philosophy or science or literature or art

or politics or religion or education, and if our elders had discovered all that there is to be discovered about existence here and left no unfinished business for us to carry on, philsophy and science and literature and art and politics and religion and education would be very different things from what they are. Life in the first case would be a predetermined unchanging thing, and in the second case it would require of us only that we learn to do as our ancestors had done. Transmission of experience would be required and an education like that of Sparta or of early Rome would be necessary. That is, whenever we think of interrelated beings so made that they may choose the way of life which they will take, we have a group whose very existence depends upon bringing up its young to the way of life which the elders have chosen. Such a group need not be intentionally progressive, but if it is not, the programme of existence which it strives to repeat from day to day and generation to generation meets resistance, both in ever-changing external environment and in the dynamic nature of the young. We are prone to believe that if the right way to think about things and men could only once be found and the proper human adjustments once be made the race might live happily ever after; but that is a delusion. It leaves out of account the infinite diversity of constitutions—capacities and points of view as well as the varied play of stimuli to which individuals must respond. There is a democracy more fundamental than that of government. It is this democracy of experience. Social organization means the utilization of these contributing individual capacities and points of view. In proportion as a society makes provisions for them in the continuing revaluation of its common life on the part of its individual members it frees them for social growth and becomes truly democratic. In viewing society as the associated interworking of human beings who reach and pursue common purposes because of freely shared experiences, I can not but feel that Professor Dewey has given the world that ideal picture of the aspiration of democracy which it has long wanted to hang beside Plato's vision of "the best state."

Society then is the conjoint, cooperative, associated doing of individuals. It never is, but is always becoming, but its component parts make their to-days and to-morrows out of their yesterdays. "The development within the young of the attitudes and dispositions necessary to the continuous and progressive life of a society can not take place by direct conveyance of beliefs, emotions, and knowledge." Each individual must determine his own beliefs, feel his own emotions, and generate his own knowledge. All that society can do is to surround the young with necessities for performing their own giving and taking in socially approved ways. Three of the more impor-

tant functions of the special environment which it creates for this purpose, which we call the school, are: "simplifying and ordering the factors of the disposition it is wished to develop; purifying and idealizing the existing social customs; creating a wider and better balanced environment than that by which the young would be likely, if left to themselves, to be influenced." The aim of education is to enable the individual to continue this education, *i. e.*, to make his own growth a conscious process on the part of each individual so that he will continue it as long as he lives.

There are certain theories of education which are opposed to this one and which must be rooted out if real education is to flourish. The first of them regards education as preparation for some future difficulty or privilege. But one can prepare to swim next year only by swimming now. The only way to prepare for the future is to utilize present possibilities to the full. The second theory regards education as the unfolding of latent powers, but keeps its eyes upon an assumed final or finished development, disregarding the fact that each stage is as worthy and final as the one which it regards as the last one. A third view defines education as the perfecting of the powers of the mind, but the supposed original faculties of the mind which it attempts to perfect are purely mythological, and a fundamental fallacy lurks in this doctrine that activities and capacities can be separated from subject-matter. The theory of education as formation takes everything educational into account save its essence—the native activities which shape themselves by their own energy. Education for culture is a process of accommodating the future to the past. Professor Dewey states his own definition of education as "that reconstruction or reorganization of experience which adds to the meaning of experience, and which increases ability to direct the course of subsequent experience."

The fundamental question of philosophy concerns the nature of knowledge, and since education has knowledge for its object the question, what is knowledge, must be settled before its work can begin. To this question there are two answers from which one must choose. One is that knowledge is the description of the things that exist. "Knowledge is a double of that which is." The other is that knowledge is not our awareness of the things that exist; it is our ability to work with them. How much better off would we be with the first kind of knowledge than without it even if we could conceivably have all of it that could possibly be had? The knowledge which we want is skill in working with what exists. "The function of knowledge is to make one experience freely available in other experiences. . . . In other words, knowledge is a perception of those connections of an object which determine its applicability in a given situation. . . .

While the content of knowledge is what *has* happened, what is taken as finished, and hence settled and sure, the *reference* of knowledge is future or prospective. For knowledge furnishes the means of understanding or giving meaning to what is still going on and what is to be done. . . . When knowledge is cut off from use in giving meaning to what is blind and baffling it drops out of consciousness entirely or else becomes an object of esthetic contemplation."

Certain philosophic schools of method "regard knowledge as something complete in itself irrespective of its availability in dealing with what is yet to be. And it is this omission which vitiates them and which makes them stand as sponsors for educational methods which an adequate conception of knowledge condemns. . . . The doctrine of formal discipline in education is the natural counterpart of the scholastic method. . . . 'Reason' is just the ability to bring the subject-matter of prior experience to bear to perceive the significance of the subject-matter of a new experience. . . . The theory of the method of knowing which is advanced in these pages may be termed pragmatic. Its essential feature is to maintain the continuity of knowing with an activity which purposely modifies the environment. It holds that knowledge in its strict sense of something possessed consists of our intellectual resources—of all the habits that render our action intelligent. Only that which has been organized into our disposition so as to enable us to adapt the environment to our needs and to adapt our aims and desires to the situation in which we live is really knowledge."

This is a very different kind of discussion of the philosophy of education from that which the ordinary book on that subject contains. It is not an attempt to fasten time-honored philosophical terms and classifications here and there upon this or that peg of the subject-matter with which education deals. It is entirely free from the woodenness and empty formality of such a proceeding. Professor Dewey has not tried to make a theory of education to fit into a preconceived system of philosophy. He has tried to think out the problems of education. His style is as simple and direct as his method is fruitful. The book represents the reflection of a lifetime. I am convinced that nowhere in any modern literature is there so profound and vitalizing a discussion of the meaning of education as he offers here.

ERNEST C. MOORE.
HARVARD UNIVERSITY

Fundamental Sources of Efficiency. FLETCHER DURELL. Philadelphia: J. B. Lippincott. 1914. Pp. 350.

The book is intended by the author to provide a few elemental principles upon which efficiency, now so energetically sought, may be

established. These principles are broad enough to serve as a basis both for the details of an individual's work, for teaching in the schools, and for a philosophy of life. Although the writer found his first inspiration in the philosophy of Herbert Spencer, he acknowledges aid from the writings of such students of efficiency as Taylor, Emerson, and Münsterberg.

A large portion of the book is given to the analysis of the concept of efficiency, and a careful definition of terms. An abundance of concrete illustrations is provided in the text to make each point clear, and every chapter is followed by a group of exercises ranging in number from 20 to 75, intended further to test the reader's understanding of principles. In a later chapter, the "efficients" derived from the preceding analysis are combined. Such combination is illustrated thus: "For instance, in the rotation of crops in agriculture we evidently have the use of the principles of diversity, direction, and rhythm. But these result in other efficiency principles, such as the retention and re-use of farm laborers the year round, the greater re-use of farm machinery, utilization of by-products, the prevention of waste, as by the destruction of insect pests, a uniformity of returns, and many other useful results and agencies" (p. 302).

In the last chapter the author offers a "systematic though brief application of the efficiency methods" to specimen departments of human thought and endeavor. The first application is made to the field of psychology, "since all applications to the world as it is must, in the ultimate analysis, be made by persons." This is followed by applications to the departments of education, sociology, business, art ethics, and religion.

Although the book is intended for general reading, as well as for text-book purposes, careful study is required to get its full value. It should furnish to its readers a much needed check upon the tendency toward the indiscriminate application of efficiency methods, and extravagant expectations of results.

A. T. POFFENBERGER, JR.

COLUMBIA UNIVERSITY.

JOURNALS AND NEW BOOK

JOURNAL OF EXPERIMENTAL PSYCHOLOGY. December, 1916. *Reflex Secretion of the Human Parotid Gland* (pp. 461–493): K. S. LASHLEY. – Experiments reported form a preliminary survey of the conditions affecting the secretion of the parotid gland. Direct reflexes of this gland are excited by mechanical, chemical, and

protopathic stimulation of the oral mucosa. There is probably no direct reflex to thermal stimuli unless they are of protopathic intensity. The secretion produced when a foreign object is chewed involves a specific reaction to a complex group of stimuli. The presence of food in the stomach excites secretion. Other conclusions are made. *Positive Acceleration in Improvement in a Complex Function* (pp. 494–507): J. CROSBY CHAPMAN.–Measurements were made at weekly intervals of 100 individuals in the typewriting class of a school of commerce. Results selected at random from the group practising for 20–100 hours show initial positive acceleration, whereas for the group practising 75–165 hours, the ordinary type of practise curve, indicating negative acceleration in the improvement, is the general rule. While no claim is made that positive acceleration in improvement, over short periods of time, is universal in adult learning, yet in complex traits it is probably always present to a certain extent and must be considered in framing a psychology of skill. *The Influence of Mental and Physical Work on the Formation of Judgments in Lifted Weight Experiments* (pp. 508–532): SAMUEL W. FERNBERGER.–Intensive mental work for a half hour does not seem to have any influence on the formation of judgments in lifted weight experiments. Very intensive physical work of the muscles utilized in the liftings has a marked and exceedingly great influence on the formation of judgments in lifted weight experiments. *The Trabue Completion Test as Applied to Delinquent Girls* (pp. 533–539): ALIDA C. BOWLER.–The purposes were (1) to determine whether an individual's graded completion test achievement might be considered indicative, to some extent, of his general mental ability; (2) to obtain a practical, graded series short enough to be completed in 15 or 20 minutes. Children from 13 to 18 were tested by the Yerkes-Bridges Point scale and by the completion test. The coefficient of correlation between the two was .79 with P.E. .0157. An individual's grade completion test achievement is, to some extent, indicative of his general mental ability. *The Effect on Foveal Vision of Bright Surroundings. IV* (pp. 540–566): PERCY W. COBB.–An investigation of the difference-threshold under various conditions as to brightness of field and surroundings. A method of computation was used which was based on the same assumptions as the classical method of constant stimuli. *Discussion.*

REVUE DE MËTAPHYSIQUE ET DE MORALE. November, 1916. *Pensées* (pp. 787–807): CH. RENOUVIER.–Miscellaneous paragraphs written during the last year of Renouvier's life (1902–03). *La démonstration géométrique et le raisonnement déductif* (pp. 808–858): L. ROUGIER.–The dilemma that if geometry is deductive, it is

tautologous, and if intuitive, it is uncertain, is solved through its possibilities of creating new objects so that "the axioms of geometry define the structure of a group; they do not determine univocally its material." *L'idéalisme de Taine* (pp. 858–878): R. LENOIR. – A presentation of Taine's thought as an independent, consistent metaphysical idealism. *Notes de critique scientifique. De L'abus de l'intuition dans l'enseignement mathématique:* L. COUTURAT. *Questions pratiques. La force du droit:* G. BELOT.

Papillault, G. Science Francaise, Scolastique Allemande. Paris: Librairie Félix Alcan. 1917. Pp. 154. Fr. 2.50.

Pintner, Rudolf and Paterson, Donald G. A Scale of Performance Tests. New York and London: D. Appleton and Company. 1917. Pp. xi + 218 $2.00.

Wells, Frederic Lyman. Mental Adjustments. New York and London: D. Appleton and Company. 1917. Pp. xv + 331. $2.50.

Worsley, A. Recognition: With an Outline of a Theory of Knowledge. Isleworth, England: A. Worsley. 1916. Pp. 64.

NOTES AND NEWS

THE National Research Council has appointed the following committee on psychology: J. McKeen Cattell, Columbia University; Raymond Dodge, Wesleyan University; Shepherd Ivory Franz, Government Hospital for the Insane; G. Stanley Hall, Clark University; C. E. Seashore, University of Iowa; E. L. Thorndike, Teachers College, Columbia University; John B. Watson, Johns Hopkins University; G. M. Whipple, University of Illinois; R. M. Yerkes, Harvard University, Chairman.

PROFESSOR WILLIAM CHANDLER BAGLEY, director of the school of education of the University of Illinois, has been appointed professor of education in Teachers College, Columbia University.

DR. RAYMOND DODGE, professor of psychology at Wesleyan University, has been appointed to the Ernest Kempton Adams research fellowship at Columbia University.

PROFESSOR R. M. YERKES, of Harvard University, has been appointed professor of psychology and director of the psychological laboratory at the University of Minnesota.

PROFESSOR J. B. PRATT, of Williams College, has been appointed Mark Hopkins Professor of Intellectual and Moral Philosophy at that institution.